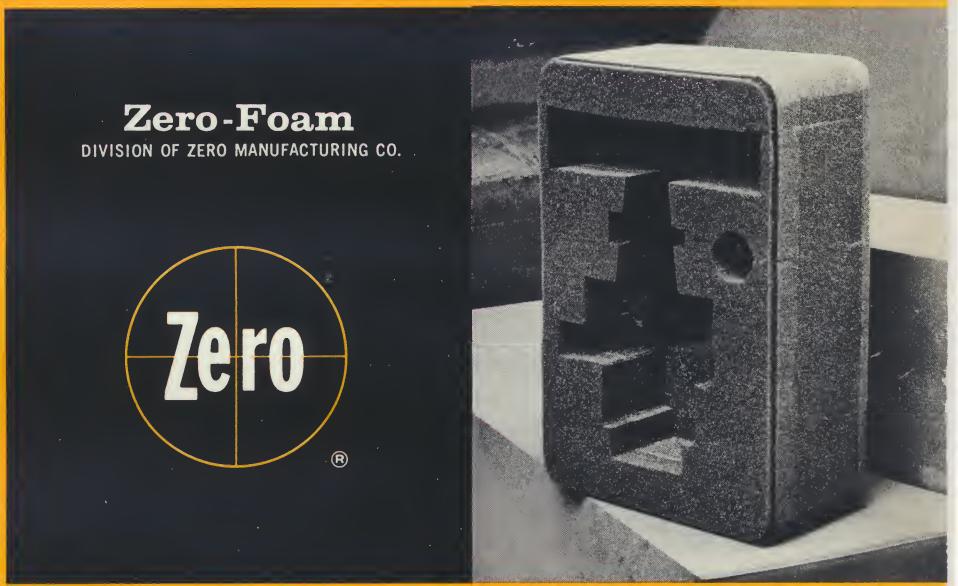


NOTE: 'convoluted foam' — sound absorber?

CATALOG T-67  
Dated June 30, 1967

Color

Fabrication and Production of Polyurethane Foam Cushioning



**Zero-Foam**

999 Front Street, Burbank, California 91502  
Telephone: (213) 849-6474

# Zero-Foam Products

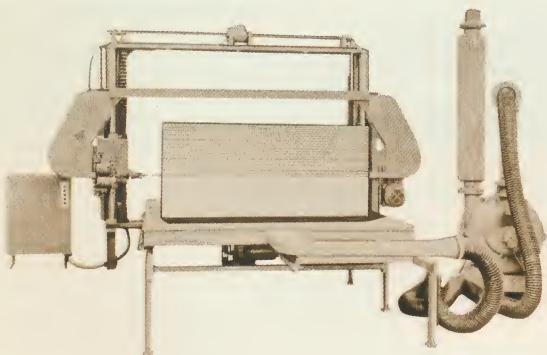
Zero-Foam Products specializes in shock-protection packaging, working in polyurethane foam, polyethylene foam (Ethafoam), and rubber. Its products take many dissimilar forms—a few are illustrated opposite—to cope with the many problems involved in protecting merchandise from shock and vibration.

## A DIVISION OF ZERO MANUFACTURING CO.

Zero-Foam is a division of Zero Manufacturing Co., whose various divisions combine to form one of the best-integrated all-around packaging suppliers in the U.S. today. Zero instrument cases, electronic consoles, cabinets, and hundreds of associated items of packaging hardware are in use in a variety of industries, in all the military services, and in past and current space programs.

## Complete facilities for fabrication of polyurethane foam and other cushioning materials.

Cushioning fabrication involves a number of processes: slabbing, cutting, grinding, die-stamping, and hot-wire forming. Zero-Foam has facilities for each of these, and so can accommodate all forms of fabrication in the most-used cushioning media: polyurethane foam, polyethylene foam (Ethafoam) and rubber. Thus, cushioning can be supplied as sheet stock, in any desired size; in custom shapes, through die stamping; cavity-formed, with compartments of any shape and depth; and, in the case of polyurethane foam, in convoluted-foam pad. Zero-Foam is equally at home in prototype or production-run operations, and has the facilities for both.



Briefly, the significant characteristics of the three major cushioning materials are as follows:

**Polyurethane Foam (MIL-P-26514)** Type I, Class II is a low-cost material with predictable performance characteristics in a temperature range of  $-40^{\circ}$  to  $250^{\circ}$ F. Its particular combination of light weight, cushioning efficiency, cleanliness, and workability makes it most desirable for protection of delicate electronic systems or components. It is highly resistant to climatic changes, is chemically inert, odorless, and available in a wide range of densities and colors; it can be used for multi-cavity cushioning and in flat sheet stock. It provides maximum protection at minimum cost.

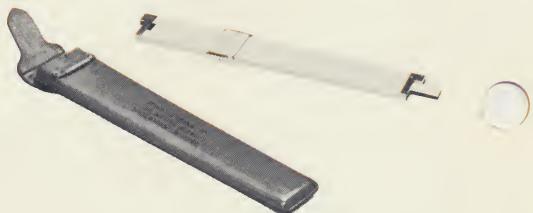
**Polyethylene Foam (Ethafoam):** This is polyethylene expanded to many times its normal state, into a lightweight cellular material. It has excellent energy-absorption qualities, along with favorable chemical, moisture-transmission, and insulating characteristics. It lends itself to fabrication with conventional cutting tools, and by hot-wire forming.

**Natural Rubber** has the cushioning characteristics of polyurethane foam, but requires higher densities, which results in increased weight and cost.

## Cushioning engineering and production counsel available at no obligation

Determining the amount of protection a given product needs is part science, part art; and designing and fabricating the cushioning to provide it is a further technology. Zero-Foam offers you this complete spread of services—engineering, design, and fabrication—in all the major cushioning materials.

You are invited to take advantage of these services through free consultation with the company's engineering staff at the earliest practicable point in the life of your product. Prototyping charges are waived with the initial order; a nominal charge is imposed for speculative or sample requests.



## FLAT SHEET STOCK

Polyurethane foam pads and cushions are available in any size to 125" long by 84" wide. Dimensional accuracy, including thickness, is maintained to  $\frac{1}{6}$ " based on 1" thickness. No tooling or dies are required.

### APPLICATIONS

Wrap-around cushioning of odd shapes not requiring conformity to contour; and as filler in crates.

### SIZES

Any size up to 125" long by 84" wide in thicknesses from  $\frac{3}{32}$ " to 24".

### DENSITIES

(Polyester) 2#/Cu. Ft., 2 $\frac{1}{2}$ #/Cu. Ft., 4#/Cu. Ft.

(Polyether) 1.1# to 2# densities.

(other densities on special request)

### COLORS

Polyester: Charcoal Grey, White, Yellow, Blue, Green

(other colors on special request)

Polyether: White, Charcoal (other colors on special request)



### DELIVERY

Usually within 3 days ARO.

How to Order: Submit purchase order specifying quantity, size (length, width, thickness), color, and density.

## STEEL DIE STAMPING

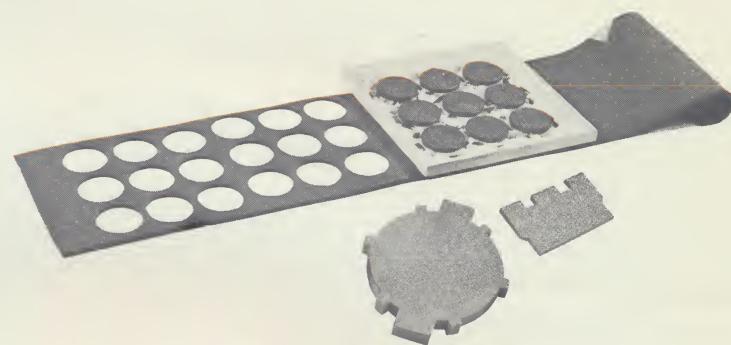
Dies are made by Zero-Foam and remain the property of the customer. Cost of the die is applicable only to the initial order; dies may be re-used at no additional cost thereafter.

### PRODUCTION COUNSEL

Consult with our engineering staff to determine proper size, and density of material, and the most economical production methods; no charge for this service.

### "AS RELEASED" ORDERS

Under this arrangement, you can combine the economies of a volume order with the convenience of periodic deliveries. Zero-Foam will schedule production of your order, stock a reserve, and make deliveries according to a schedule pre-arranged to meet your requirements.

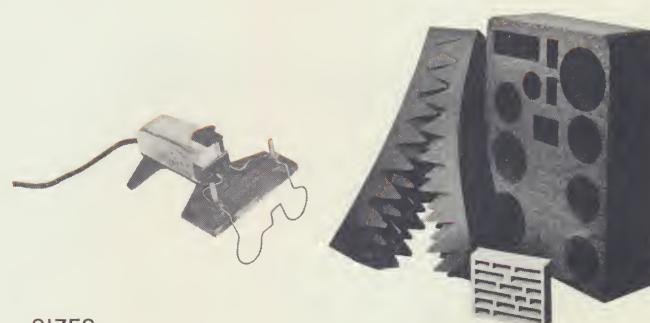


How to Order: Each order is individually quoted; a purchase order covering the complete order, including dies, is all that is required.

## HOT WIRE FORMING

This is an economical method of product cushioning, affording maximum protection to the most delicate items. A single block of polyurethane is shaped to fit the container, and cavities are cut out to fit each item. Cavities of any depth and configuration can be formed; heavy electrically-resistant wire is shaped to the appropriate form, and the heated wire slices cleanly through the material. Aluminum templates are used to maintain precision and consistency. A variety of colors and densities of polyurethane are available. Standards of MIL-P-26514 Type I, Class II are routinely met.

Savings are afforded by the elimination of tooling, dies, and molds; at the same time, the individually fitted cavities provide greater protection than could any method of fitting smaller pieces of material around the item. The long life of polyurethane permits extended re-use of the cushion.



### SIZES

Within reason, there are no limitations on the size of the cushion. Depth, and contour of cavities to be formed are designed to your specifications.

How to Order: If possible, we prefer to work with the actual products to be packaged to assure dimensional accuracy. If not available, submit a drawing or blueprint. Dimensions of your container must also be submitted.

## CONVOLUTED POLYESTER URETHANE FOAM

Convoluted foam is ideal for cushioning a variety of large, small, and odd-shaped objects in a single package; the ridges hug the item, preventing movement. This adaptability to different shapes and sizes makes it possible to accommodate all the items in a product line in a relatively small number of standard packages. It is unusually light in weight, and is flexible enough to wrap around an object if desired.

Available in three patterns and a variety of densities. May be certified to AMS-3570, MIL-C-26861 and MIL-P-26514. Delivery: 3 days A.R.O.

CODE NO.	DENSITY	COLORS
100 TF	2# per Cu. Ft.	Charcoal Grey, Blue, Green, Yellow (other colors on special request)
125 TF	2½# per Cu. Ft.	Charcoal Grey, White
200 TF	4# per Cu. Ft.	Charcoal Grey, White
12 TF	1.1# to 2#	Charcoal, White

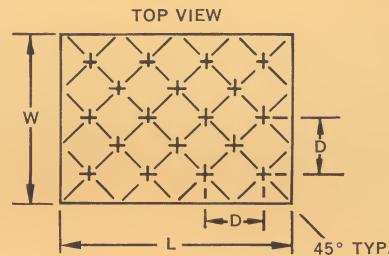
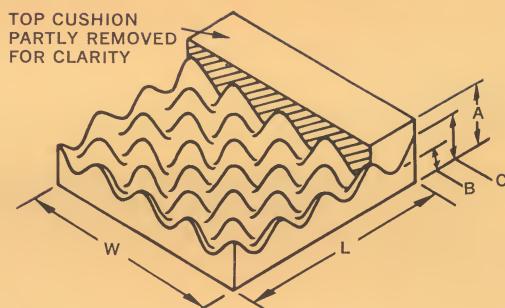
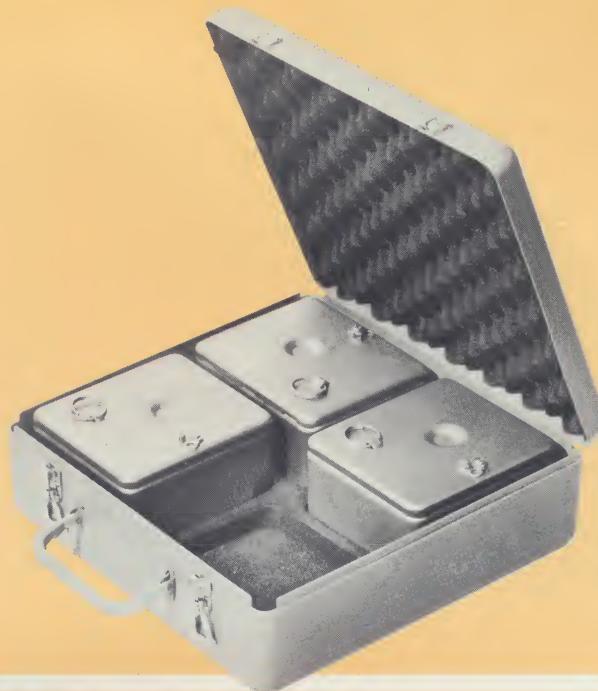
LIMITATIONS	#811 PATTERN	#911 PATTERN
MAX. "L"	125"	125"
MAX. "W"	36"	36"
MAX. "A"	5"	4"
MAX. "B"	1"	¾"

### ORDERING INFORMATION

Parts must be ordered in sets. Complete detailed information must be furnished. Two pieces of convoluted foam when nested together equals "A" thickness.

### ORDERING EXAMPLE

NUMBER OF SETS ..... 20  
 "L" LENGTH ..... 125"  
 "W" WIDTH ..... 36"  
 "A" DIMENSION ..... 5"  
 "B" DIMENSION ..... 1"  
 "C" DIMENSION ..... 4"  
 CODE NUMBER ..... 100 TF  
 PATTERN NUMBER ..... #811  
 COLOR ..... Grey

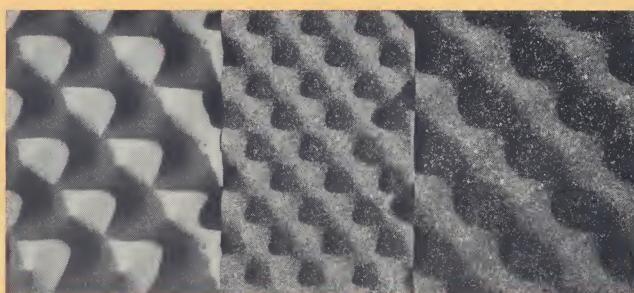


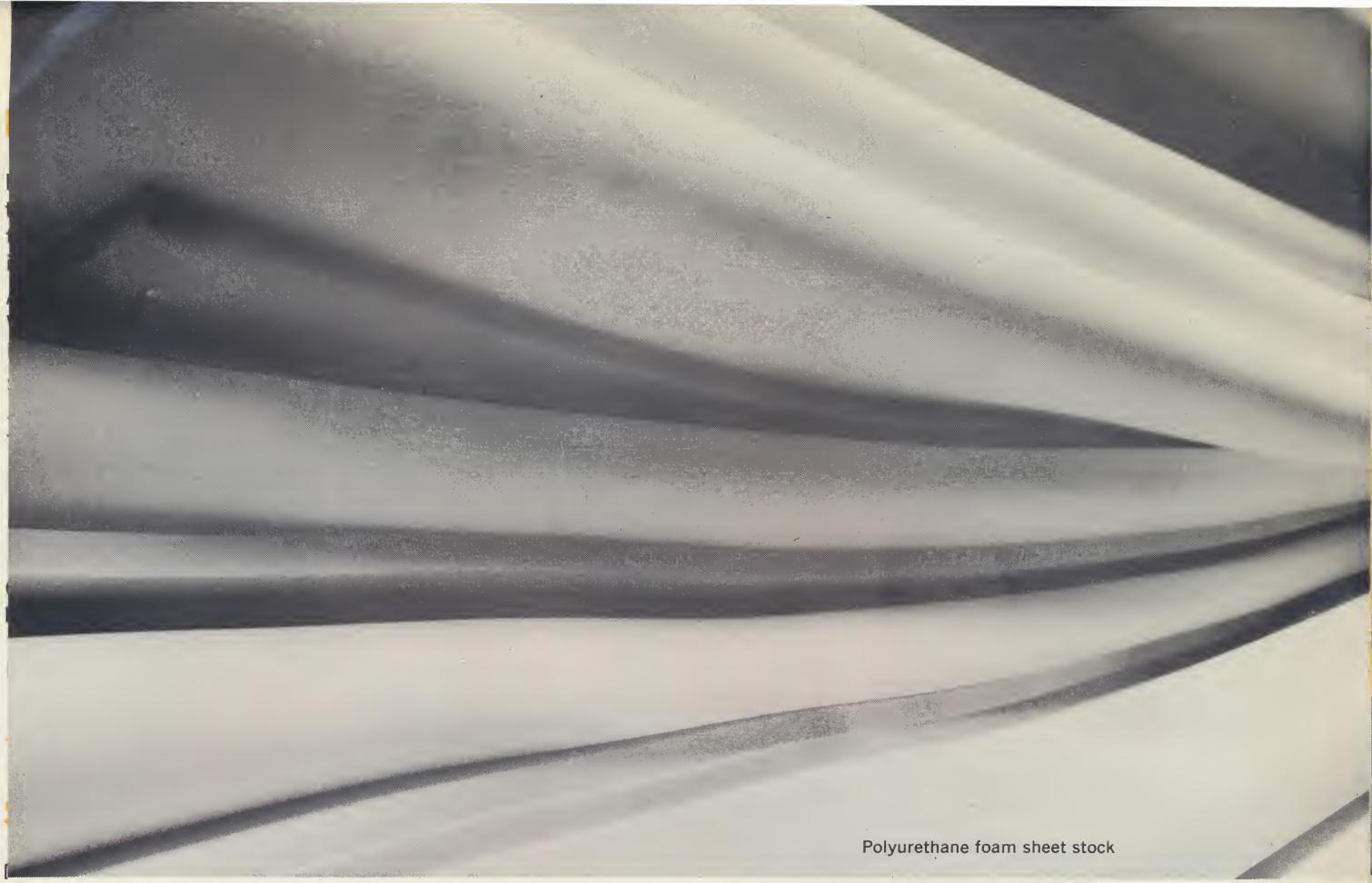
Note: "B" dimension plus "C" dimension must equal "A" dimension.

#811 Pattern "D" dimension—2" c.c. approximately

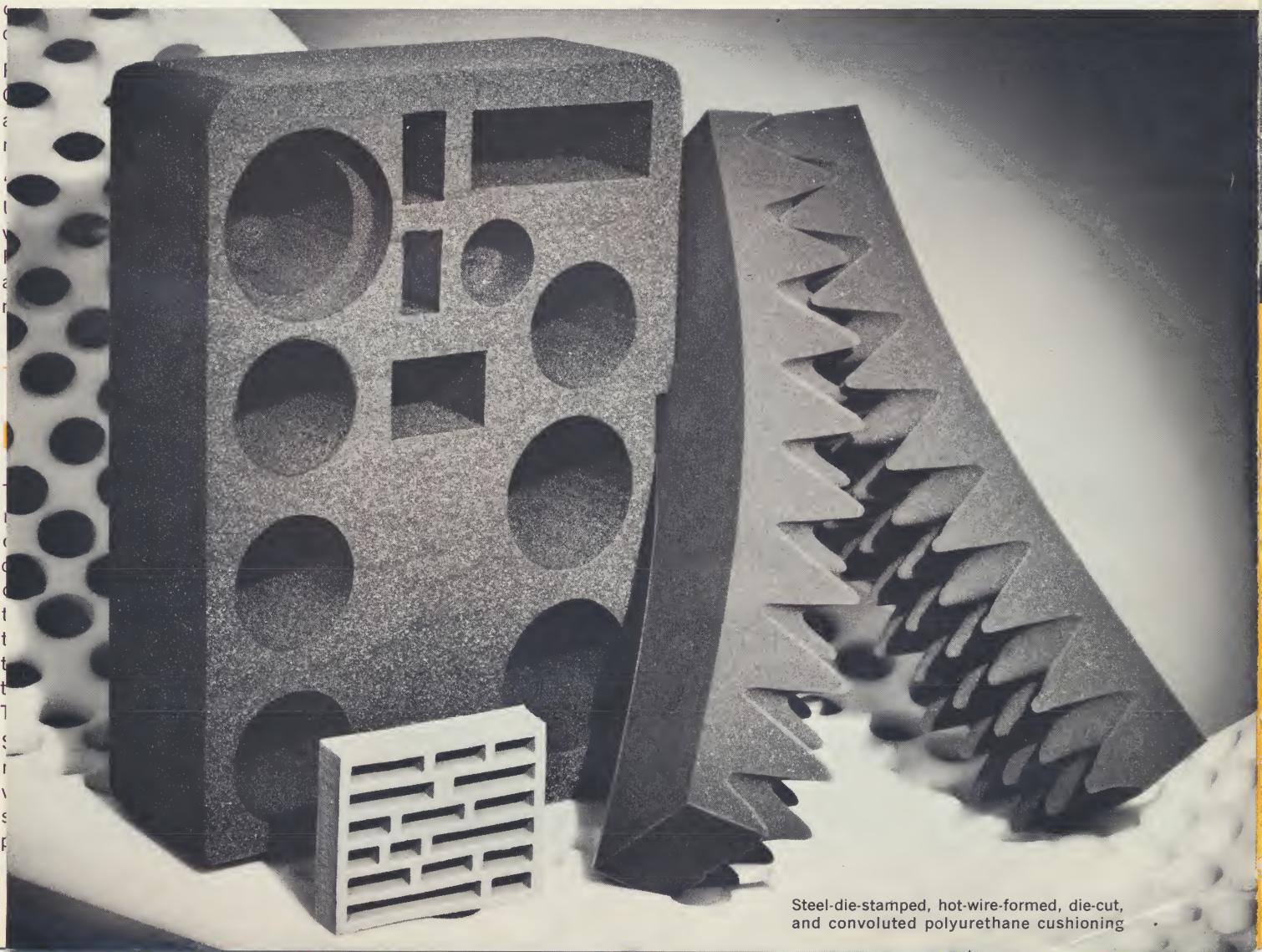
#911 Pattern "D" dimension—1½" c.c. approximately.

YOU WOULD RECEIVE: 20 sets of convoluted foam, 125" x 36" x 5" overall; (dimension "B" is 1" and "C" is 4") in pattern #811; color, Charcoal Grey.





Polyurethane foam sheet stock



Steel-die-stamped, hot-wire-formed, die-cut, and convoluted polyurethane cushioning

#### PACKAGING AND CUSHIONING COUNSEL

You are invited to consult with Zero-Foam's design and production personnel on any and all cushioning questions. You will find that most problems can be greatly simplified, and that requirements can be translated into shop procedures most economically, if action is taken at the early stages.

#### PROTOTYPES

Zero-Foam is equipped to produce prototypes to meet the most exacting requirements. There is no charge for this service with the initial order; on speculative or sample requests, a nominal service charge is applied.

#### "AS RELEASED" ORDERS

On large-volume orders requiring periodic drop shipments, Zero-Foam will make and maintain all necessary arrangements for production and scheduled deliveries.

#### REPEAT ORDERS

Zero-Foam will store all dies and production equipment. Dies remain the property of the customer, until called for. A purchase order or other authorization is sufficient for repeat orders.

#### DELIVERY

Polyurethane sheet stock and convoluted foam pads are normally shipped in three days, depending on size of order. On orders requiring dies, tooling, or patterns, allow one week.

#### PRICES

Every order is quoted individually according to the requirements of each job, and quoted the same to all customers. Telephone and TWX inquiries are quoted same day.

#### CONSULT WITH ZERO-FOAM ON ANY CUSHIONING MATERIAL PROBLEM

**Zero-Foam**  
999 Front Street/Burbank, California 91502  
Telephone: (213) 849-6474

DIVISION OF ZERO MANUFACTURING CO.



#### OTHER ZERO CATALOGS AND SERVICES

<b>CATALOG B</b>	Stock Deep Drawn Aluminum and Magnesium Boxes
<b>CATALOG C</b>	Standard Deep Drawn Instrument Housings
<b>CATALOG D</b>	Military/Transit/Combination/Instrument Cases
<b>CATALOG DV</b>	Val-An™ Line Military/Transit/Combination Instrument Cases
<b>CATALOG E</b>	Modular Packaging System — Lightweight, Re-usable Shipping/Storage Containers
<b>CATALOG F</b>	Stock Commercial Carrying Cases
<b>CATALOG L</b>	Precision Plastic Molded Parts
<b>CATALOG N</b>	Plastic Potting Boots
<b>CATALOG P</b>	Aluminum Chassis Slides
<b>CATALOG Q</b>	Steel Chassis Slides and Handles
<b>CATALOG R</b>	Panel Mounted Blowers
<b>CATALOG S</b>	Cabinets, Consoles, Accessories
<b>CATALOG SS</b>	RFI Shielded Aluminum Electronic Enclosures